

Claims

An exhaust system for an internal combustion engine

1. An exhaust system for an internal combustion engine comprising a first exhaust train including a flow-permeable first muffler, in particular a rear muffler, and at least one second exhaust train parallel thereto and including a flow-permeable second muffler, in particular a rear muffler, wherein the first muffler and the second muffler have a mutually deviating structure, characterized in that
 - the first muffler (120, 200) comprises an inlet pipe (216) and an outlet pipe (224), with the outlet pipe (224) having a small length; and
 - the second muffler (122, 300) comprises an inlet pipe (316) and an outlet pipe (324), with the outlet pipe (324) having a large length.
2. An exhaust system in accordance with claim 1, characterized in that the outlet pipe (224) of the first muffler (120, 200) has at least approximately twice the length of the outlet pipe (324) of the second muffler (122, 300).
3. An exhaust system in accordance with claim 1 or claim 2, characterized in that the outlet pipe (324) of the second muffler (122, 300) has an at least slightly larger diameter than the outlet pipe (224) of the first muffler (120, 200).

4. An exhaust system in accordance with any one of the preceding claims, characterized in that the first muffler (120, 200) has an inner structure divided into three part spaces (210, 212, 214) by means of two metal separating sheets (206, 208), with the first metal separating sheet (206) being perforated and the second metal separating sheet (208) being intact.
5. An exhaust system in accordance with claim 4, characterized in that the input pipe (216) opens into the first part space (210) at the inlet side.
6. An exhaust system in accordance with claim 4 or claim 5, characterized in that the outlet pipe (224) leads, starting from the first part space (210) on the inlet side, through the second part space (212) and the third part space (214), with the outlet pipe (224) being able to be acted on by flow both from the first part space (210) and from the first part space (210) through the second part space (212).
7. An exhaust system in accordance with any one of the claims 4 to 6, characterized in that a resonator (226) extending into the second part space (212) and third part space (214) adjoins the inlet pipe (216).
8. An exhaust system in accordance with any one of the preceding claims, characterized in that the second muffler (122, 300) has an inner structure divided into three part spaces (310, 312, 314) by means of two metal separating sheets (306, 308), with the first metal separating sheet (306) being intact and the second metal separating sheet (308) being perforated.

9. An exhaust system in accordance with claim 8, characterized in that the inlet pipe (316) extends through the first part space (310) and through the second part space (312) at the inlet side and opens into the third part space (314).
10. An exhaust system in accordance with any one of the claims 8 or 9, characterized in that the outlet pipe (324) leads through the second part space (312) into the first part space (310) on the inlet side, starting from the third part space (314), and back through the second (312) part space and the third part space (314) in an arcuate curve, with the outlet pipe (324) being able to be acted on by flow at the inlet side both from the third part space (314) and from the third part space (314) through the second part space (312).
11. An exhaust system in accordance with any one of the claims 8 to 10, characterized in that a resonator (326) connects the third part space (314) to the first part space (310).

AMENDED CLAIMS [received at the International Office on 18 January 2005 (2005-01-18), original claims 1 and 2 replaced by new claims 1 and 2)

An exhaust system for an internal combustion engine

1. An exhaust system for an internal combustion engine comprising a first exhaust train including a flow-permeable first muffler, in particular a rear muffler, and at least one second exhaust train parallel thereto and including a flow-permeable second muffler, in particular a rear muffler, wherein the first muffler and the second muffler have a mutually deviating structure, characterized in that
 - the first and second exhaust trains (102, 104) are guided over the whole length substantially without a cross-position;
 - the first muffler (120, 200) comprises an inlet pipe (216) and an outlet pipe (224), with the outlet pipe (224) having a small length; and
 - the second muffler (122, 300) comprises an inlet pipe (316) and an outlet pipe (324), with the outlet pipe (324) having a large length.
2. An exhaust system in accordance with claim 1, characterized in that the outlet pipe (224) of the second muffler (120, 200) has at least approximately twice the length of the outlet pipe (324) of the first muffler (122, 300).

3. An exhaust system in accordance with claim 1 or claim 2, characterized in that the outlet pipe (324) of the second muffler (122, 300) has an at least slightly larger diameter than the outlet pipe (224) of the first muffler (120, 200).
4. An exhaust system in accordance with any one of the preceding claims, characterized in that the first muffler (120, 200) has an inner structure divided into three part spaces (210, 212, 214) by means of two metal separating sheets (206, 208), with the first metal separating sheet (206) being perforated and the second metal separating sheet (208) being intact.
5. An exhaust system in accordance with claim 4, characterized in that the input pipe (216) opens into the first part space (210) at the inlet side.
6. An exhaust system in accordance with claim 4 or claim 5, characterized in that the outlet pipe (224) leads, starting from the first part space (210) on the inlet side, through the second part space (212) and the third part space (214), with the outlet pipe (224) being able to be acted on by flow both from the first part space (210) and from the first part space (210) through the second part space (212).
7. An exhaust system in accordance with any one of the claims 4 to 6, characterized in that a resonator (226) extending into the second part space (212) and third part space (214) adjoins the inlet pipe (216).

8. An exhaust system in accordance with any one of the preceding claims, characterized in that the second muffler (122, 300) has an inner structure divided into three part spaces (310, 312, 314) by means of two metal separating sheets (306, 308), with the first metal separating sheet (306) being intact and the second metal separating sheet (308) being perforated.
9. An exhaust system in accordance with claim 8, characterized in that the inlet pipe (316) extends through the first part space (310) and through the second part space (312) at the inlet side and opens into the third part space (314).
10. An exhaust system in accordance with any one of the claims 8 or 9, characterized in that the outlet pipe (324) leads through the second part space (312) into the first part space (310) on the inlet side, starting from the third part space (314), and back through the second (312) part space and the third part space (314) in an arcuate curve, with the outlet pipe (324) being able to be acted on by flow at the inlet side both from the third part space (314) and from the third part space (314) through the second part space (312).
11. An exhaust system in accordance with any one of the claims 8 to 10, characterized in that a resonator (326) connects the third part space (314) to the first part space (310).